07-SC-05, Physical Sciences Facility,
Pacific Northwest National Laboratory (PNNL), Richland, Washington
Project Data Sheet is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-3A, Approve Start of Site Work, Foundations and Steel, which was approved on July 20, 2007, with a Total Project Cost (TPC) of $224,000,000.

A Federal Project Director with a certification level II has been assigned to this project.

No Project Data Sheet (PDS) was submitted for this project in the FY 2008 budget.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1 (Design Start)	(Design/PED Complete)	CD-2	CD-3A	CD-3 (Construction Start
FY 2007	09/23/2004	1Q FY 2006	1Q FY 2008	2Q FY 2007	—	1Q FY 2008
FY 2009	09/23/2004	12/15/2006	2Q FY 2008	06/22/2007	7/20/2007	2Q FY 2008

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3A – Site work, Foundations and Steel
CD-3 – Approve Start of Construction

(fiscal quarter or date)

	CD-4A	CD-4 (Construction Complete)	D&D Start	D&D Complete
FY 2007	—	2Q FY 2011	FY 2011	FY 2015
FY 2009	2Q FY 2010	2Q FY 2011	FY 2011	FY 2015

CD-4A – Approve Start of Operations
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Decontamination and Decommissioning (D&D) work
D&D Complete – Completion of D&D work

Decontamination and Decommissioning (D&D) activities for the facilities being vacated in the 300 Area will be conducted under a separate project managed by EM.

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2007	25,000-35,000	155,000–210,000	180,000–245,000	20,000–25,000	20,000–25,000	200,000–270,000
FY 2009	29,486	180,443	209,929	14,071	14,071	224,000

4. Project Description, Justification, and Scope

This project, the line-item construction element of the Pacific Northwest National Laboratory (PNNL) Capability Replacement Laboratory (CRL) projects, will be used to construct new laboratory and office space on the PNNL site north of Horn Rapids Road (also referred to as the Horn Rapids Triangle) and to complete life extension upgrades to the 325 Building to accommodate a portion of the existing research capabilities being displaced as a result of the closure and cleanup of facilities in the Hanford 300 Area. The buildings to be constructed or modernized by this project are listed below.

- 3410 Building—Materials Science and Technology
- 3410 Building—Chemistry and Processing
- 3420 Building—Radiation Detection
- 3425 Building—Ultra-low Background/Deep Laboratory
- 3430 Building—Ultra-trace
- 3440 Building—Large Detector Laboratory
- 325 Building (Radiochemical Processing Laboratory)—Shielded Operations

The balance of research capabilities accounted for in the CRL will be housed in leased facilities and in three other existing 300 Area buildings (Buildings 318, 331, and 350) in the southern portion of the 300 Area that DOE's Office of Science (SC) will also retain. Several ancillary support facilities, including a fire station, a telephone switch, and internet node will also be retained.

The new facilities listed above (i.e., all except the 325 Building) will constitute approximately 190,000 square feet of new construction to accommodate the following mission critical capabilities: materials science and technology, radiation detection, ultra-trace, and chemistry and processing (non-nuclear). The facilities will include laboratory and office space to house appropriate equipment and staff suited for each of these purposes. New construction on the Horn Rapids Triangle will also include a central utility plant, a paved outdoor area for experimental capabilities to detect radiological materials in vehicles and containers, and a large detector laboratory.

To support increased heating, ventilation, and air conditioning (HVAC) capacity requirements, modernization of the 325 Building will include removal of fume hoods and design, fabrication and installation of new hot cells and glove boxes. In addition, repairs and other upgrades will be performed to allow continued use of the facility.

The estimate provided is based on design development to support CD-2. Project Engineering and Design (PED) funds were received in FY 2004, 2005, and 2006. The FY 2006 appropriation provided additional PED funds to complete project engineering and design and to initiate construction. Construction began in FY 2007 with initiation of site work. This project data sheet is requesting construction funds in FY 2009.

SC, the National Nuclear Security Administration (NNSA), and the Department of Homeland Security (DHS) are jointly funding the PSF project. The allocation of costs among the three project sponsors was determined based upon the estimated net square footage of space required to perform research in support of each sponsor's mission needs, as identified in the Justification of Mission Need. Sponsor shares of the Total Project Cost (TPC) will be as follows: SC, 44 percent; NNSA, 31 percent; DHS, 25 percent. On November 7, 2006, SC, NNSA, and DHS formally established a funding strategy with the purpose, to

the extent funding is appropriated and available, of providing a predictable funding profile, critical to finishing this project on schedule and within budget.

Currently, more than 4,000 PNNL staff members conduct and support research activities on a consolidated Laboratory campus composed of 79 buildings with nearly two million square feet of space. Approximately one-third of that space (about 700,000 square feet) is located in the Hanford Site 300 Area—a National Priorities List waste site of aging, cold war facilities targeted by DOE for an aggressive cleanup effort to reduce costs and accelerate site closure. Facilities in the 300 Area represent 45 percent of PNNL's experimental laboratory space and house many capabilities important to accomplishing DOE strategic objectives.

DOE, which operates PNNL and the Hanford Site, the U. S. Environmental Protection Agency, and the State of Washington signed a comprehensive cleanup and compliance agreement on May 15, 1989. This Hanford Federal Facility Agreement and Consent Order, or Tri-Party Agreement, established enforceable regulatory milestones for the cleanup of the site including the completion of surplus facility disposition and remedial action clean-up of the Hanford Site 300 Area by 2015. The DOE Office of Environmental Management (EM), the office responsible for executing the Hanford 300 Area cleanup project has determined that the most efficient and economical method of cleanup will entail wholesale removal of the surplus buildings and underground utility systems to get at and remove the contamination. Limited transition out of the 300 Area is already underway, and PNNL staff and equipment have already been removed from several of the facilities and relocated to a newly leased office building and existing laboratory space. Facilities currently occupied by PNNL that are not to be retained by the laboratory will all be vacated in 2011 and available for cleanup.

SC programs at PNNL support research in chemical, materials, and environmental sciences, systems biology, and atmospheric sciences and climate change. The capabilities required include expertise and programs in biology, low-dose radiation biology, environmental molecular chemistry, microbiology, biogeochemistry, subsurface science, systems biology, and biotechnology. These capabilities are needed to solve some of the nation's most pressing problems in energy production, carbon sequestration, national security, and environmental remediation.

NNSA strategically invests in science, technology and infrastructure to develop the essential capabilities to accomplish its mission. In support of the NNSA mission, PNNL conducts science, technology, and analytic activities in the 300 Area to prevent the proliferation of weapons of mass destruction, promote international nuclear safety, ensure compliance with international arms control treaties, and protect the nation's critical infrastructure. The ultra-low-level analytical laboratory provides a national asset to the NNSA user community. The PNNL staff skills, experience, and research equipment in the 300 Area are an integral part of the NNSA nonproliferation activities.

DHS strategically invests in facilities to support its research needs and to develop and maintain the essential capabilities to accomplish its mission. PNNL will continue to provide research capabilities to DHS in the ultra-trace, radiation detection, information analysis, certification, systems biology, chemistry, and processing capabilities.

FY 2006 and FY 2007 construction funds will be used for Horn Rapids Triangle site work, foundations, and structural steel. FY 2008 construction funds will be used to begin construction on the Horn Rapids Triangle facilities and 325 Building modifications. FY 2009 funds will continue construction and modifications.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A and DOE M 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule[a]

(dollars in thousands)

	Appropriations				Obligations				Costs			
	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total
Total Estimated Costs												
PED												
FY 2004	—	986	—	986	—	986	—	986	—	—	—	—
FY 2005	—	4,960	2,000	6,960	—	4,960	2,000	6,960	—	—	—	—
FY 2006	12,870	2,970	—	15,840	12,870	2,970	—	15,840	742	3,710	2,000	6,452
FY 2007	3,700	—	2,000	5,700	3,700	—	2,000	5,700	12,392	5,206	—	17,598
FY 2008	—	—	—	—	—	—	—	—	3,436	—	2,000	5,436
Total, PED	16,570	8,916	4,000	29,486	16,570	8,916	4,000	29,486	16,570	8,916	4,000	29,486
Construction												
FY 2006	—	1,980	—	1,980	—	1,980	—	1,980	—	—	—	—
FY 2007	4,220	10,000	—	14,220	4,220	10,000	—	14,220	—	1,219	—	1,219
FY 2008	24,772	24,773	13,511	63,056	24,772	24,773	13,511	63,056	8,693	26,861	13,511	49,065
FY 2009	13,147	41,155	18,743	73,045	13,147	41,155	18,743	73,045	33,198	38,277	18,451	89,926
FY 2010	3,625	7,977	7,536	19,138	3,625	7,977	7,536	19,138	3,607	19,794	7,828	31,229
FY 2011	1,689	3,643	3,672	9,004	1,689	3,643	3,672	9,004	1,955	3,377	3,672	9,004
Total, Construction	47,453	89,528	43,462	180,443	47,453	89,528	43,462	180,443	47,453	89,528	43,462	180,443
Total TEC												
FY 2004	—	986	—	986	—	986	—	986	—	—	—	—
FY 2005	—	4,960	2,000	6,960	—	4,960	2,000	6,960	—	—	—	—
FY 2006	12,870	4,950	—	17,820	12,870	4,950	—	17,820	742	3,710	2,000	6,452
FY 2007	7,920	10,000	2,000	19,920	7,920	10,000	2,000	19,920	12,392	6,425	—	18,817
FY 2008	24,772	24,773	13,511	63,056	24,772	24,773	13,511	63,056	12,129	26,861	15,511	54,501
FY 2009	13,147	41,155	18,743	73,045	13,147	41,155	18,743	73,045	33,198	38,277	18,451	89,926

[a] DHS is expected to fund 25 percent, or $55,934,000, of the Total Project Cost for this project, with the remaining portion funded by DOE. The Financial Schedule is based on assumed funding contributions agreed to in the Memorandum of Understanding (MOU) among the funding parties, with differences between the FY 2008 appropriation and the MOU assumed to be offset in FY 2009.

(dollars in thousands)

	Appropriations				Obligations				Costs			
	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total
FY 2010	3,625	7,977	7,536	19,138	3,625	7,977	7,536	19,138	3,607	19,794	7,828	31,229
FY 2011	1,689	3,643	3,672	9,004	1,689	3,643	3,672	9,004	1,955	3,377	3,672	9,004
Total, TEC	64,023	98,444	47,462	209,929	64,023	98,444	47,462	209,929	64,023	98,444	47,462	209,929
Other Project Costs (OPC)												
OPC except D&D												
FY 2004	600	—	250	850	600	—	250	850	—	—	—	—
FY 2005	5,000	—	—	5,000	5,000	—	—	5,000	3,201	—	232	3,433
FY 2006	—	—	—	—	—	—	—	—	1,135	—	—	1,135
FY 2007	—	—	—	—	—	—	—	—	352	—	—	352
FY 2008	—	—	1,489	1,489	—	—	1,489	1,489	912	—	1,505	2,417
FY 2009	—	—	4,257	4,257	—	—	4,257	4,257	—	—	4,257	4,257
FY 2010	—	—	2,464	2,464	—	—	2,464	2,464	—	—	2,464	2,464
FY 2011	—	—	11	11	—	—	11	11	—	—	13	13
Total, OPC	5,600	—	8,471	14,071	5,600	—	8,471	14,071	5,600	—	8,471	14,071
Total Project Cost (TPC)												
FY 2004	600	986	250	1,836	600	986	250	1,836	—	—	—	—
FY 2005	5,000	4,960	2,000	11,960	5,000	4,960	2,000	11,960	3,201	—	232	3,433
FY 2006	12,870	4,950	—	17,820	12,870	4,950	—	17,820	1,877	3,710	2,000	7,587
FY 2007	7,920	10,000	2,000	19,920	7,920	10,000	2,000	19,920	12,744	6,425	—	19,169
FY 2008	24,772	24,773	15,000	64,545	24,772	24,773	15,000	64,545	13,041	26,861	17,016	56,918
FY 2009	13,147	41,155	23,000	77,302	13,147	41,155	23,000	77,302	33,198	38,277	22,708	94,183
FY 2010	3,625	7,977	10,000	21,602	3,625	7,977	10,000	21,602	3,607	19,794	10,292	33,693
FY 2011	1,689	3,643	3,683	9,015	1,689	3,643	3,683	9,015	1,955	3,377	3,685	9,017
Total, TPC	69,623	98,444	55,933	224,000	69,623	98,444	55,933	224,000	69,623	98,444	55,933	224,000

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate[a]	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	29,466	25,486	28,241
Contingency	20	2,000	1,377
Total, PED	29,486	27,486	29,618
Construction			
Site Preparation (General Site Work Package)	4,501	4,250	4,577
Equipment (standard building equipment included in Other Construction below)	—	4,750	—
Other Construction	142,128	135,267	140,621
Contingency	33,814	29,141	35,057
Total, Construction	180,443	173,408	180,255
Total, TEC	209,929	200,894	209,873
Contingency, TEC	33,834	31,141	36,434
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Design	4,165	4,165	4,165
Start-Up	7,906	13,651	7,658
Contingency	2,000	5,025	2,304
Total, OPC	14,071	22,841	14,127
Contingency, OPC	2,000	5,025	2,304
Total, TPC	224,000	223,735	224,000
Total, Contingency	35,834	36,166	38,738

7. Schedule of Project Costs

For schedule of project costs, see Section 5, “Financial Schedule.”

[a] Previous Total Estimate submitted under 07-SC-05 in the FY 2007 Defense Nuclear Nonproliferation, Nonproliferation and Verification R&D budget request.

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2Q FY 2010
Expected Useful Life (number of years)	20 years (existing facilities) 40 years (new facilities)
Expected Future Start of D&D of this capital asset (fiscal quarter)	2Q FY 2050

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	6,000	N/A	395,000	N/A
Maintenance	3,700	N/A	245,000	N/A
Total, Operations & Maintenance	9,700	N/A	640,000	N/A

9. Required D&D Information

This project involves construction of a new facility and completion of upgrades to the 325 Building to house capabilities being displaced by the closure of the 300 Area of the Hanford Site in Richland, Washington. As described in Section 4, the D&D costs are being funded by the EM program over the next 8-10 years, and are not included in this estimate.

	Square Feet
Area of new construction	~190,000
Area of existing facility(s) being replaced	~400,000
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name and site location of existing facility to be replaced:

PNNL-occupied facilities in the 300 Area of the Hanford Site in Richland, Washington.

10. Acquisition Approach

Design and inspection of the facilities and equipment will be conducted by the operating contractor and architectural-engineering (A/E) subcontractor as appropriate. Technical construction will be done by a competitively bid lump sum contract administered by PNNL. To the extent feasible, construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bidding. Project and construction management, inspection, coordination, testing and checkout witnessing, and acceptance will be performed by the PNNL operating contractor.